

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE (AUTONOMOUS)-POLLACHI

198	B.Sc. Physics	Core I : Properties of Matter	20UPS101	2020
199	B.Sc. Chemistrty	Core Paper – V : Coordination and Bioinorganic Chemistry	20UCY507	2020
200	B.Sc. Botany	Major Paper XIV - Horticulture & Plant Breeding	20UBY614	2020
201	B.Sc. Botany	Skill based subjects (Major electives)-Forest Botany	20UBY6S3	2020
202	B.Sc. Botany	Major Paper XIII – Biotechnology and Genetic engineering	20UBY510	2020
203	B. Sc. Zoology	Core Major Paper I : Non Chordata	20UZY101	2020
204	B. Sc. Zoology	Core Major Paper II : Chordata	20UZY202	2020
205	B. Sc. Zoology	Ancillary Zoology Paper-II Economic Zoology	20UBY2A2	2020
206	B. Sc. Zoology	Core Major Paper- V: Genetics	20UZY405	2020
207	B. Sc. Zoology	Core Major Paper-X Biochemistry and Bioinformatics	20UZY510	2020
208	B. Sc. Zoology	Major Practical -III (Non Smester Pattern) Developmental Biology , Animal Physiology&Endocrinology, Biostatistics and Biophysics, Bioinformatics &Biochemistry and MLT	20UZY614	2020
209	B. Sc. Zoology	Skill Based Elective (SBE) Vermiculture	20UZY6S3	2020
210	B. Sc. Zoology	Core Elective Paper-VI Wild life Concervation	20UZY6E6	2020
211	M.Com	Internet,HTML and Cyber Security	20PCO103	2020
212	M.Com	Labour Legislation	20PCO309	2020
213	Tamil Aided	Tamil Paper I	20UTL101	2020
214	Tamil Aided	Tamil Paper II	20UTL202	2020
215	Tamil Aided	Tamil Paper III	20UTL303	2020
216	Tamil Aided	Tamil Paper IV	20UTL404	2020
217	B.A Tamil	Ikkala illakiyam	20UTM101	2020
218	B.A Tamil	Sitru illakiyam	20UTM204	2020
219	B.A Tamil	Kappiyangal	20UTM509	2020
220	B.A Tamil	Sanga illakiyam Ettutogai	20UTM613	2020
221	B.A Tamil	Sanga illakiyam pattupattu	20UTM614	2020

BoS Minutes
Highlighted



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HERE



S. NO	MEMBERS	SIGNATURE
1.	Dr. M. Latha Isabel (Chairman) Asst. Prof. of Botany NGM College Pollachi	Latha Isabel 22/2/2020
2.	Dr. P. Ponnuragan (University Nominee) Ass. Prof. of Botany Bharathiar University Coimbatore	ABSENT
3.	Dr. M. Mayilsamy (Subject Expert) Asst. Prof. of Botany Arulmigu Palani Andavar college Palani	M. Mayilsamy 22/2/2020
4.	Dr. R. Prema (Academic Auditor) Ass. Prof. of Botany APA College for Women Palani	R. Prema 22/02/2020
5.	Mr. G. Selvaraj (Industrial Expert) SVN organic farms Udumalaipettai	G. Selvaraj
6.	Mr. K. Tanuiseelan M.Sc. (Alumini) Biologist, Advanced Wildlife Management TC Pollachi	K. Tanuiseelan 22/2/2020
7.	Dr. A. Loganadevi Asst. Prof. of Botany, NGMC	A. Loganadevi 24/2/2020
8.	Dr. K. Rajalakshmi Asst. Prof. of Botany, NGMC.	K. Rajalakshmi 22/2/2020
9.	Dr. E. Neelamathi Asst. Prof. of Botany, NGMC.	E. Neelamathi 22/2/2020

MINUTES

The Board of Studies in Botany met on 22.2.2020 at 10.30 am, in the Department of Botany. The resolutions made in the board are as follows:

1. The continuous internal assessment (CIA) components for the academic year 2020-2021 will be changed as follows
 External - 40 marks, Internal - 30 marks.
 To get a pass in the End of Semester Examinations, a candidate has to score minimum of 28 marks out of 70 marks in the External Examinations. Similarly a minimum of 12 marks out of 30 marks should be scored in the internal marks.
2. The syllabi for B.Sc Botany and B.Sc Zoology (Ancillary) is restructured for all the semesters. Necessary additions and omissions are to be made in the proposed syllabi.
3. Restructure the syllabus for practical papers (core & elective).
4. Two value added courses of Mushroom cultivation & Organic farming are introduced.
5. Horticulture and Plant Breeding (core) paper is introduced for the semester VI and Forest Botany paper is introduced as skill based Elective instead of Horticulture & Plant Breeding.
6. Biotechnology and Genetic Engineering papers are merged into a single paper for V semester titled as Biotechnology & Genetic Engineering. The board recommends to approve all the above changes.

Ans

Dr. R. MUTHUKUMARAN,
 M.A., M.Phil., B.Ed., Ph.D.,
 PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

DEPARTMENT OF BOTANY
B.Sc., BOTANY
SCHEME OF EXAMINATION (I - VI SEMESTER)
(FOR CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2020-2023)

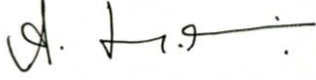
Part No	Course Code	Course title	Lecture+ Tutorial/ Practical Hours/ week	Duration of Exam Hrs	Max. Marks			Credit Point
					Internal	End-of-Semester	Total	
	Semester I							
I	20UTL101	Tamil/Hindi Paper – I	6	3	30	70	100	3
II	20UEN101	English Paper – I	5	3	30	70	100	3
III	20UBY101	Major Paper I - Plant Diversity I (Phycology, Mycology and Bryology)	9	3	30	70	100	4
	20UBY1A1	Allied - Paper I Zoology	7	3	30	70	100	3
IV	20UHR101	Human Rights	1	2	-	50	50	2
	20HEC101	Human Excellence - Personal values & SKY yoga practice - I	2	2	25	25	50	1
V		Extension Activities (Annexure –I)						
	500							16
	Semester II							
I	20UTL202	Tamil/ Hindi Paper – II	6	3	30	70	100	3
II	20UEN202	English Paper – II	5	3	30	70	100	3
III	20UBY202	Major Paper II Plant Diversity II (Pteridophytes Gymnosperms and Palaeobotany)	6	3	30	70	100	4
	20UBY203	Major Practical I – Paper III (Plant diversity I & II (Phycology, Mycology and Bryology & Pteridophytes Gymnosperms and Palaeobotany)	2	3	40	60	100	4
	20UBY2A2	Allied - Paper II Zoology	7	3	30	70	100	3
	20UBY2A3	Allied - Paper III Practical	2	3	40	60	100	4
IV	20EVS201	Environmental Studies	2	2	-	50	50	2
	20HEC202	Human Excellence - Family values & SKY yoga practice- II	2	2	25	25	50	1
V		Extension Activities (Annexure –I)						
	700							24

	Semester III							
I	20UTL303	Tamil/ Hindi Paper – III	5	3	30	70	100	3
II	20UEN303	English Paper – III	6	3	30	70	100	3
III	20UBY304	Major Paper IV- Anatomy and Embryology	9	3	30	70	100	4
	20UBY3A4	Allied Paper IV - Chemistry	8	3	30	70	100	3
IV	20UBY3N1/ 20UBY3N2	Skill based subjects (Non major electives)- Landscape designing/ Herbal cosmetics *Basic Tamil paper I	1	2	-	50	50	2
	20HEC303	Human Excellence - Professional values & SKY yoga practice- III	2	2	25	25	50	1
V		Extension Activities (Annexure –I)						
	500							16
	Semester IV							
I	20UTL404	Tamil/ Hindi Paper – IV	5	3	30	70	100	3
II	20UEN404	English Paper – IV	6	3	30	70	100	3
III	20UBY405	Major Paper V – Cell Biology, Biochemistry and Biophysics	6	3	30	70	100	4
	20UBY406	Major Practical II - Paper VI (Anatomy & Embryology, Cell Biology, Biochemistry and Biophysics)	2	3	40	60	100	4
	20UBY3A5	Allied - Paper V- Chemistry	6	3	30	70	100	3
	20UBY3A6	Allied paper VI – Chemistry Practical	2	3	40	60	100	4
IV	20UBY4N3/ 20UBY4N4	Skill based subjects (Non major electives)- (Remote sensing and natural resource management/ Bioinformatics) *Basic Tamil paper II	1	2	-	50	50	2
	20HEC404	Human Excellence – Social values & SKY yoga practice- IV	2	2	25	25	50	1
V		Extension Activities (Annexure –I)	50				50	1
	750							25
	Semester V							
III	20UBY507	Major Paper – VII - Taxonomy of Angiosperms	6	3	30	70	100	4
	20UBY508	Major Paper VIII - Microbiology and plant	5	3	30	70	100	4

* The credits given are applicable only to the students who opt for Basic Tamil paper and the credits for Human Excellence papers cannot be given to them.

**Grand total should be equal/below 3900 (For UG Programmes); 2550 (For PG Programmes) SS – Self study, SBE – Skill Based Elective, NME–Non Major Elective

Bloom's Taxonomy Based Assessment Plan



Head of the Department

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Programme Code	B.Sc.,	Programme Title	Bachelor of Science (BOTANY)
Course code	20UBY510	Course Title	2020-2023
		BIOTECHNOLOGY & GENETIC ENGINEERING	Semester 5
Hrs/Week	5		Credits 4

Course Objective

- To acquire knowledge on plant tissue culture
- To learn the basic principles, tools and techniques in Genetic engineering

Course Outcome

K1	CO1	To understand the concept of totipotency, micropropagation and meristem culture
K2	CO2	To learn the principle of somatic embryogenesis, haploids, synthetic seeds
K3	CO3	To revisit the molecular tools and vectors in genetic engineering
K4	CO4	To understand the principle of gene transfer, blotting techniques and markers
K5	CO5	To update the knowledge on Transgenic plants, DNA finger printing and other applications

Unit	Content	Hrs
Unit I	Introduction to plant tissue culture – concept of totipotency and pluripotency – sterilization techniques – solid & liquid medium (MS medium, Whites medium) – Micropropagation – stages of micropropagation – applications. Callus and cell suspension culture – meristem culture.	13
Unit II	Somatic embryogenesis – principle and applications of somaclonal variation & cryopreservation. Haploid production – anther culture – pollen culture – embryo culture and rescue – protoplast isolation, fusion and culture– somatic hybridization – cybrids- *synthetic seeds .	13
Unit III	Scope and history of genetic engineering – molecular tools in genetic engineering: restriction endonucleases, ligases, phosphatases, methylases, and kinases. Host cells – vectors- nomenclature – properties of good vector – types of vectors – plasmid (<i>Ti</i> , <i>PBR322</i> & <i>pUC18</i>), bacteriophage (λ phage) – artificial chromosome vectors (BAC & YAC) – transposable elements.	13
Unit IV	Gene transfer methods: Natural and Direct – <i>Agrobacterium</i> mediated gene transfer –. Construction of genomic and cDNA libraries –Selection and screening of rDNA – DNA hybridization – DNA probes – blotting techniques (southern, northern and western blots) – molecular markers (RAPD, RFLP and SNPs)- selectable markers – Reporter genes.	13
Unit V	*Applications : Transgenic plants – disease resistant (<i>Bt</i> cotton) – herbicide resistant (round up soya) – golden rice – <i>Flavr savr</i> tomato –Edible vaccines –Plantibodies –DNA Finger printing technique and its applications – DNA barcoding – Biochip- DNA vaccine – recombinant DNA safety guidelines – Intellectual Property Rights (IPR) and Bioethics.	13

**Self study topics*

Powerpoint presentation, Quiz, Seminar, Assignment, Case study on the DNA finger printing technique

Text Books:

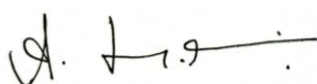
1. Chawla H.S., 2000. Introduction to Plant Biotechnology, Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi.
2. Ramawat K.G., 2001. Plant Biotechnology, S. Chand & Company Ltd, New Delhi.
3. Ignacimuthu S., 1996. Applied Plant Biotechnology, TataMcGraw Hill Publishing Company Ltd, New Delhi.
4. Satyanarayana U., 2005. Biotechnology. Books and Allied (P) Ltd., Kolkata.
5. Dubey R.C., 1995. A text book on Biotechnology (2nd Ed), S. Chand & Company Ltd., New Delhi.
6. Gupta P. K., 2001. Elements of Biotechnology, Rastogi Publications. Meerut.

Reference Books:

1. Street H.E., 1977. Plant tissue culture, Blackwell Scientific Publications, London.
2. Trigiano R.N. and Gray D.J., 1996. Plant tissue culture – concepts and laboratory exercises. CRC Press, New York. Brown T.A., 1995. Gene Cloning- an introduction. Chapman and Hall Publication (3rd Ed). New York.
3. Desmond S.T. Nicholl, 2004. An Introduction to Genetic Engineering (2nd Ed). Cambridge University Press.
4. Freifelder D., 1994. Molecular Biology, Narosa Pub. Inc., Boston, London.
5. Nicholl Desmond S.T., 2002. An Introduction to Genetic Engineering (Second Edition), Cambridge University Press.
6. Primrose S.B. and Twyman R.M., 2008. Gene Manipulation. Blackwell Pub. USA.

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	M	H
CO2	M	S	M	M	H
CO3	L	S	M	S	S
CO4	M	S	M	L	S
CO5	M	M	H	H	S

S-Strong; H-High; M-Medium; L-Low



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Programme Code	B.Sc.,	Programme Title	Bachelor of Science (BOTANY)
Course code	20UBY6S3	Course Title	2020-2023
		SKILL BASED ELECTIVE (MAJOR) – FOREST BOTANY	Semester 6
Hr/Week	1		Credits 2

Course Objective

- To impart theoretical and practical knowledge in all the areas of forestry

Course Outcome

K1	CO1	To know the history and types of forests
K2	CO2	To understand the principle behind forest laws
K3	CO3	To propagate plants and conserve soil and forests
K4	CO4	To develop interest in marketing of forest products

Unit	Content	Hrs
Unit I	History of forest development; Forest types of India, Dendrology, Afforestation, Deforestation and Social forestry.	3
Unit II	Fundamentals of Wild Life, Forest Pathology, Forest Ecology, Biodiversity & Conservation	3
Unit III	Forests Soils: Classification, factors affecting soil formation; physical, chemical and biological properties. Soil conservation. Role of forests in conserving soils.	2
Unit IV	Non-Timber Forest Products (NTFPs)\ - Principles and establishment of herbaria and arboreta. Conservation of forest ecosystems. Clonal parks. Marketing and Trade of Forest Produce	2
Unit V	Forest laws, necessity; general principles, Indian Forest Act 1927; Forest Conservation Act, 1980; Wildlife Protection Act 1972. Endangered plants, Endemism and Red Data Books.	3

Charts, Powerpoint presentation, Demonstration

Text Books:

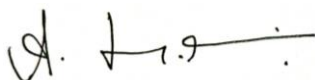
- S. Prabhu K. Manikandan , Indian Forestry A Breakthrough Approach to Forest Service 7th Edition , Jain Brothers publications, Rajasthan, India.
- K. P. Sagreiya, Sharad Singh Negi, Forests and Forestry, National Book Trust, India
- Sharad Singh Negi · Forest Policy and Law, International Book Distributors, Dehradun-India
- Ajay.S, Rawath , Indian forestry, A perspective, Indus publishing company, New Delhi

Reference Books:

- K.T. Parthiban, N. Krishnakumar, M. Karthick - introduction to Forestry & Agro forestry, Scientific publishers, Jodhpur, India
- Richard P. Tucker -A Forest History of India,SAGE publications, New Delhi, India

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	L	M	S	M
CO2	M	H	H	M	M
CO3	M	H	S	M	M
CO4	H	M	S	S	S

S-Strong; H-High; M-Medium; L-Low



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Programme Code	B.Sc.,	Programme Title	Bachelor of Science (BOTANY)
Course code	20UBY614	Course Title	2020-2023
		HORTICULTURE AND PLANT BREEDING	Semester 6
Hr/Week	5		Credits 4

Course Objective

- To study the basic principles of horticulture
- To learn the techniques of plant propagation
- To know the methods and practices in plant breeding

Course Outcome

K1	CO1	To know the methods of vegetative propagation
K2	CO2	To understand the principle behind plant propagation
K3	CO3	To propagate plants using simple horticultural techniques
K4	CO4	To develop interest in flower arrangement, fruit preservation and vegetables

Unit	Content	Hrs
Unit I	Scope – divisions of horticulture – methods of vegetative propagation – cutting – layering – grafting – manures – fertilizers – irrigation.	13
Unit II	Gardening – types of garden – indoor garden – kitchen garden – public garden – important ornamentals – habits and types – garden components – lawn – glass house – rockery – water garden - topiary.	13
Unit III	Production technology – growth regulators in horticulture – plant protection measures for horticultural crops – cultivation of vegetables (Brinjal) – fruits (Banana) – flowers (Jasmine) – plantation crops (Tea) – medicinal plants (Sarpagandha).	13
Unit IV	Commercial horticulture – extraction of jasmine concrete – papain – bonsai – flower arrangement – cut flowers – preservation of fruits and vegetables.	13
Unit V	Plant breeding – objectives – plant selection – plant introduction – hybridization – hybrid vigour – achievements in crop breeding – sugarcane and paddy.	13

Charts, Powerpoint presentation, Demonstration

Text Books:

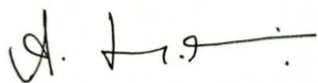
1. Mani Bhusan Rao, 1964. Text book of Horticulture. Macmillan India Ltd., New Delhi.
2. Sharon Pastor *et al.*, 2010. Basics of Horticulture, Oxford Book Company, Jaipur.
3. Singh P., 1996. Plant Breeding. Kalyani publishers, New Delhi.

Reference Books:

4. Kumar N., 1993. An introduction to horticulture, TNAU, Coimbatore.
5. George Acquaah, 2004. Horticulture – principles and practices. Prentice Hall of India Pvt Ltd., New Delhi.
6. Edmond, 1988. Fundamentals of Horticulture. MCGH Publications New Delhi.
7. Shukla R.S. and P.S. Chandal, 1998. Cytogenetics Evolution and Plant Breeding. Chand & Company Ltd. New Delhi.
8. Satya P. 2012. Plant Breeding. Books and allied Pvt Ltd. Kolkatta.

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	L	M	S	M
CO2	M	H	H	M	M
CO3	M	H	S	M	M
CO4	H	M	S	S	S

S-Strong; H-High; M-Medium; L-Low



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